

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-29. (Cancelled)

30. (New) An isolated Nod-factor binding element comprising:

- a) one or more isolated first Nod-factor binding polypeptide comprising at least 70% amino acid sequence identity to SEQ ID NO: 8; or
- b) a fragment of said first polypeptide;

wherein said one or more first polypeptide or fragment comprises at least 2 extracellular domain LysM motifs; and

wherein said one or more first polypeptide or fragment selectively binds strain-specific forms of Nod-factor.

31. (Withdrawn, New) An isolated Nod-factor binding element comprising:

- a) one or more isolated second Nod-factor binding polypeptide comprising at least 70% amino acid sequence identity to SEQ ID NO: 24; or
- b) a fragment of said second polypeptide;

wherein said one or more second polypeptide or fragment comprises at least 2 extracellular domain LysM motifs; and

wherein said one or more second polypeptide or fragment selectively binds strain-specific forms of Nod-factor.

32. (New) The isolated Nod-factor binding element of claim 30, further comprising:

an isolated second Nod-factor binding polypeptide comprising at least 70% amino acid sequence identity to SEQ ID NO: 24, or a fragment thereof;

wherein said second polypeptide or fragment comprises at least 2 extracellular domain LysM motifs and selectively binds strain-specific forms of Nod-factor.

33. (New) The isolated Nod-factor binding element of claim 32, wherein said one or more first polypeptide comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 8, 15, 32, 40, 48, and fragments thereof; and

wherein said one or more second polypeptide comprises an amino acid sequence selected from the group consisting of SEQ ID NO: 24, 25, 52, 54, and fragments thereof; and

wherein said first and second polypeptides or fragments each comprises at least 2 extracellular domain LysM motifs and selectively binds strain-specific forms of Nod-factor.

34. (New) The isolated Nod-factor binding element of claim 30, comprising:

a) an isolated second Nod-factor binding polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO: 24, 25, 52, and 54, or a fragment of said first polypeptide; and

b) an isolated first Nod-factor binding polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO: 8, 15, 32, 40, and 48, or a fragment of said second polypeptide;

wherein said first and second polypeptide or fragments each comprises at least 2 extracellular domain LysM motifs and selectively binds strain-specific forms of Nod-factor.

35. (Withdrawn, New) An isolated nucleic acid molecule encoding a first Nod-factor binding polypeptide or fragment according to claim 30.

36. (Withdrawn, New) An isolated nucleic acid molecule encoding a second Nod-factor binding polypeptide or fragment according to claim 31.

37. (Withdrawn, New) An isolated nucleic acid molecule encoding a first or second Nod-factor binding polypeptide or fragment according to claim 32.

38. (Withdrawn, New) An isolated nucleic acid molecule which encodes a first or second Nod-factor binding polypeptide or fragment of claim 32, wherein said nucleic acid molecule hybridizes with a nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of SEQ ID NO: 6, 7, 11, 12, 21, 22, 23, 39, 47, 51, and 53 under stringency conditions of no less than about 1.0x SSC at 65° C.

39. (Withdrawn, New) An expression cassette comprising a nucleic acid molecule encoding one or more first or second Nod-factor binding polypeptide, or fragment thereof, wherein said polypeptides or fragments comprise at least 2 extracellular domain LysM motifs and selectively binds strain-specific forms of Nod-factor, and wherein said Nod-factor binding polypeptide comprises an amino acid sequence:

- a) having at least 70% sequence identity to SEQ ID NO: 8, 15, or 25;
- b) selected from the group consisting of SEQ ID NO: 8, 15, 24, 25, 32, 40, 48, 52, and 54; or
- c) encoded by a nucleic acid molecule that hybridizes with a nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of SEQ ID NO: 6, 7, 11, 12, 21, 22, 23, 39, 47, 51, and 53 under stringency conditions of no less than about 1.0xSSC at 65° C.

40. (Withdrawn, New) An expression cassette comprising a nucleic acid molecule according to claim 35.

41. (Withdrawn, New) The expression cassette of claim 39, wherein the nucleic acid molecule encoding the Nod-factor binding polypeptide or fragment is operably linked to a transcriptional regulatory element.

42. (Withdrawn, New) A vector comprising the expression cassette of claim 41.

43. (Withdrawn, New) A cell that is stably transformed with the expression cassette of claim 41.

44. (Withdrawn, New) The cell according to claim 43, wherein said cell is a plant cell.

45. (Withdrawn, New) A method of producing a plant expressing a Nod-factor binding element, the method comprising:
introducing into the plant a transgenic expression cassette comprising a nucleic acid sequence encoding one or more Nod-factor binding polypeptide or fragment thereof, wherein said Nod-factor binding polypeptide comprises an amino acid sequence:
a) selected from the group consisting of SEQ ID NO: 8, 15, 24, 25, 32, 40, 48, 52, and 54;
b) having at least 70% sequence identity to SEQ ID NO: 8, 15, 25, or 32; or
c) encoded by a nucleic acid molecule that hybridizes with a nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of SEQ ID NO: 21, 22, 23, 51, and 53 under stringency conditions of no less than about 1.0xSSC at 65° C;
wherein said polypeptides or fragments comprise at least 2 extracellular domain LysM motifs and selectively binds strain-specific forms of Nod-factor, and
wherein the nucleic acid sequence is operably linked to a promoter, and
selecting transgenic plants and their progeny expressing said Nod-factor binding polypeptide.

46. (Withdrawn, New) The method of claim 45, wherein the transgenic expression cassette is introduced into the plant through a sexual cross.

47. (Withdrawn, New) The method of claim 45, wherein said promoter is a native or heterologous root specific promoter.

48. (Withdrawn) The method of claim 45, wherein said promoter is a native or heterologous constitutive promoter.

49. (Withdrawn, New) A transgenic plant expressing a heterologous Nod-factor binding element according to claim 30.

50. (Withdrawn, New) The transgenic plant of claim 49, expressing a Nod-factor binding element according to claim 31, and having a specific rhizobial strain recognition.

51. (Withdrawn, New) The transgenic plant of claim 49, wherein the plant is a non-nodulating dicotyledonous plant.

52. (Withdrawn, New) The transgenic plant of claim 51, wherein the plant is a non-nodulating monocotyledonous plant.

53. (Withdrawn, New) The transgenic plant of claim 52, wherein said monocotyledonous plant is a cereal.

54. (Withdrawn, New) A method for marker assisted breeding of Nod-factor binding alleles encoding variant Nod-factor binding polypeptides, comprising the steps of:

- a) determining the nodulation frequency of legume plants expressing a variant Nod-factor binding polypeptide having specific rhizobial strain recognition and having an amino acid sequence at least 70% identical to a sequence selected from the group consisting of SEQ ID NO: 8, 15, 24, 25, and 32;
- b) identifying a DNA polymorphism at a locus genetically linked to or within the

allele encoding said variant Nod-factor binding polypeptide;

- c) preparing a molecular marker based on said DNA polymorphism; and
- d) using said molecular marker for the identification and selection of a plant carrying a Nod-factor binding allele encoding said variant Nod-factor binding polypeptide.

55. (Withdrawn, New) The method according to claim 54, wherein said variant Nod-factor binding polypeptide has an amino acid sequence comprising at least 80% sequence identity with a sequence selected from the group consisting of SEQ ID NO: 8, 15, 24, 25, 32, 40, 48, 52, and 54.

56. (Withdrawn, New) A plant selected according to the method of claim 54, carrying a Nod-factor binding protein allele encoding a variant Nod-factor binding polypeptide.

57. (Withdrawn, New) The method of claim 54, wherein the selected plant has enhanced nodulation frequency and/or root nodule occupancy and/or enhanced symbiotic nitrogen fixation ability relative to a control plant comprising a non-variant Nod-factor binding allele.

58. (Withdrawn, New) The method according to claim 57, wherein said plant is a legume.